

**SAS Superstructure**

Location: 04-SF-80-13.2 / 13.9

Client Name: CalTrans

Run date 22-Nov-14

Time 7:08 AM

**Daily Diary Report by Bid Item**

Contract No.: 04-0120F4

Diary #: 1024 Const Calendar Day: 597 Date: 22-Jan-2014 Wednesday

Inspector Name: Brignano, Bob Title: Transportation Engineer

Inspection Type:

Shift Hours: Break: Over Time:

Federal ID:

Location:

Reviewer: Schmitt, Alex Approved Date: Status: Submit

**04-0120F4  
04-SF-80-13.2/13.9  
Self-Anchored  
Suspension Bridge****Weather**

Temperature	7 AM	12 PM	4 PM
Precipitation			Condition clear

Working Day ☒ If no, explain:**Diary:**

Dispute

**General Comments**

CCO 314, SAMPLING AND TESTING A354 GRADE BD MATERIAL:



VGO from Oregon is working on site today with 2 engineers – Rob Rutledge and Mattea (flew in last night or this morning). They start work on site approximately 0800 and leave the site approximately 1630 after an 8 hour day in the field. They are present for producing the morning data reports, elevating the power and network cables near the VGO trailer (to keep out of water when it rains), monitoring during the morning jack adjustment at TR 7, monitoring during the morning/afternoon jacking steps at TR's 5 through 11, and producing the evening data reports.

ABF Engineer Kelvin Chen is working in the field and office on CCO 314 all day today. ABF Engineering Manager Kevin Smith is also working part time in the field on CCO 314 today for the TR 7 jack adjustment operation and some jacking steps.

Ironworkers Barry Rothman and Jared Garrett are working an 8-hour shift 0700 through 1530 today, with most of that on CCO 314. Barry starts the day at 0700 making shims for TR 7. After he is complete with the shims, Jared joins the work on CCO operations at 0900. They both leave the CCO work after 1400. The portions of the day not on CCO 314 are on other work elsewhere at the Pier 7 warehouse area not covered by this diary.

At TR 7, because of the uneven/skewed jacking of the jacking beam by the pair or jacks, there is work this morning to correct the situation for future jacking steps. Two days ago, the jacks were evened out and the skew eliminated in the jacking beam, while switching from one pair of jacks to the other pair of jacks. Yesterday, the jacks were retracted and the jacking beam pulled back to maximize the jacking stroke and get the jack pistons retracted to take out some of the rotation that is believed to come from extended jacks. This morning, between 0700 and 0900, shims are cut and ground to use at Jacks A and B to lock out the swivels on the ends of the jacks.

Work on the test rig (shim installation) starts after 0900, after the ironworkers, VGO, and CT-METS are ready. VGO is present for monitoring to determine if tension is being added and CT-METS AE personnel are monitoring to verify cracks are not propagating in the test rod which would be a safety issue when working around the rod. From CT-METS, Elijah Turner is present with MISTRAS personnel on the phone line continuously monitoring all frequencies on the two channels for this test rig during this operation. First shims are added between the guide angles and the jacking beam to restrict transverse movement of the jacking beam (and skew or rotation of the jacking beam). Then the operation starts to install shims between the locking collars of Jacks A and B and the end plate at the north end of the test rig. First Jacks A and B are extended and Jacks C and D are retracted by bleeding off the hydraulic fluid into a bucket



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(with fittings on the ends of the hose to allow bleed off of hydraulic fluid). Then the locking collars on Jacks A and B are moved to make room for the shims. After shim installation, the locking collars on Jacks A and B are moved again to be tight on the shims. Finally, Jacks C and D are extended and Jacks A and B are retracted by bleeding off the hydraulic fluid into a bucket (with fittings on the ends of the hose to allow bleed off of hydraulic fluid). This operation on the jacks is complete at approximately 1130, and then the first jacking step is started at TR 7.

For the jacking steps, Elijah Turner from CT-METS is present with MISTRAS personnel on the phone line continuously monitoring all frequencies on the two channels for each test rig during the jacking operation. Also present is Lindsay Motal from the DJV during all jacking steps.

Test Rig #7 (4" dia., Tower Saddle Tie Rod, rod ID 5) Jacking step:

This is the 7th jacking step and the rod is being jacked to 0.70 Fu. The post-seating of the nut target is 1,085.840 +10/-0 kips. The expected hydraulic pressure at this locked off force is 4,800 psi. Based on the previous jacking step, the expected seating loss is ~65 kips, meaning the initial jacking target is ~1,150 kips. There is no end stop on the 500-ton jacks used in this test rig, with a red line showing on a jack piston meaning that the jack piston is close to coming out of the jack housing, so the jacks are visually monitored during the jacking steps at this test rig to look for the red line. Jacking is started at 1135. At 4,800 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,086 kips. The hydraulic pressure is increased to 5,100 psi and the primary strain gauges give a force of 1,150 kips. The AE is checked with the ok given at 1142. The nut is tightened, and it noted that the thread fit between the rod and nut is tight and it takes extra effort to rotate the nut. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,149 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 1,028 kips (seating loss = 121 kips). This is much more than the expected seating loss because of the issue with the tight thread fit between the rod and nut. For the second jacking step, at 5,100 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,157 kips. The AE is checked with the ok given at 1147. The nut is tightened – the nut/rod threads are a tight fit, and it takes extra effort to move the nut, but the expected amount of nut rotation is achieved. This is accomplished by using a plate wrench instead of a chain wrench and working the nut back and forth a few times to loosen up the tight fit. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,156 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 1,092 kips (seating loss = 64 kips). At 1148, the force is within the tolerance.

Test Rig #8 (3.5" dia., PWS Anchor Rod, Rolled Threads, rod ID E-118, Heat OYI) Jacking step:

This is the 7th jacking step and the rod is being jacked to 0.70 Fu. The post-seating of the nut target is 816.340 +10/-0 kips. The expected hydraulic pressure at this locked off force is 4,800. Based on the previous jacking step, the expected seating loss is ~60 kips, meaning the initial jacking target is ~875 kips. Jacking is started at 1152. At 4,800 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 808 kips. The hydraulic pressure is increased to 5,100 psi and the primary strain gauges give a force of 850 kips. The hydraulic pressure is increased to 5,200 psi and the primary strain gauges give a force of 866 kips. The hydraulic pressure is increased to 5,250 psi and the primary strain gauges give a force of 880 kips. The AE is checked with the ok given at 1154. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 879 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 819 kips (seating loss = 60 kips). At 1155, the force is within the tolerance. The hydraulic pump is moved to the next location and the hoses attached, and then the lunch break starts.

Test Rig #9 (3.5" dia., PWS Anchor Rod, Rolled Threads, rod ID W-074, Heat OTD) Jacking step:

This is the 8th jacking step and the rod is being jacked to 0.75 Fu. The post-seating of the nut target is 874.650 +10/-0 kips. The expected hydraulic pressure at this locked off force is 5,100 psi. Based on the previous jacking step, the expected seating loss is ~60 kips, meaning the initial jacking target is ~935 kips. Jacking is started at 1235. At 5,100 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 868 kips. The hydraulic pressure is increased to 5,400 psi and the primary strain gauges give a force of 897 kips. The hydraulic pressure is increased to 5,500 psi and the primary strain gauges give a force of 925 kips. The hydraulic pressure is increased to 5,550 psi and the primary strain gauges give a force of 938 kips. The AE is checked with the ok given at 1243. The nut is tightened. Prior



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to bleeding off the jacks, the primary strain gauges give a force of 933 kips (bleed loss = 5 kips). After bleeding off the jacks, the primary strain gauges give a force of 869 kips (seating loss = 64 kips), which is not in tolerance. For the second jacking step, at 5,600 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 940 kips. The AE is checked with the ok given at 1248. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 936 kips (bleed loss = 4 kips). After bleeding off the jacks, the primary strain gauges give a force of 874 kips (seating loss = 62 kips), which is not in tolerance. For the third jacking step, at 5,600 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 941 kips. The AE is checked with the ok given at 1252. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 938 kips (bleed loss = 3 kips). After bleeding off the jacks, the primary strain gauges give a force of 878 kips (seating loss = 60 kips). At 1253, the force is within the tolerance.

Test Rig #10 (3.5" dia., PWS Anchor Rod, Cut Threads, rod ID E-036, Heat OTD) Jacking step:

This is the 9th jacking step and the rod is being jacked to 0.80 Fu. The post-seating of the nut target is 932.960 +10/-0 kips. The expected hydraulic pressure at this locked off force is 5,500 psi. Based on previous jacking steps and other test rigs, the expected seating loss is ~60 kips (assuming can get tighten the nut better at this test rig with a plate wrench instead of with a chain wrench, because previous seating losses at this test rig were 78 kips to 89 kips, which is too much – too great of a percentage of Fu), meaning the initial jacking target is ~995 kips. Jacking is started at 1255. At 5,500 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 941 kips. The hydraulic pressure is increased to 5,800 psi and the primary strain gauges give a force of 994 kips. The AE is checked with the ok given at 1259. The nut is tightened, using a plate wrench instead of a chain wrench. Prior to bleeding off the jacks, the primary strain gauges give a force of 988 kips (bleed loss = 6 kips). After bleeding off the jacks, the primary strain gauges give a force of 911 kips (seating loss = 77 kips), which is not in tolerance. For the second jacking step, at 5,900 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,006 kips. The AE is checked with the ok given at 1305. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,002 kips (bleed loss = 4 kips). After bleeding off the jacks, the primary strain gauges give a force of 925 kips (seating loss = 77 kips), which is not in tolerance. For the third jacking step, at 5,950 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,016 kips. The AE is checked with the ok given at 1308. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,012 kips (bleed loss = 4 kips). After bleeding off the jacks, the primary strain gauges give a force of 943.7 kips (seating loss = 68 kips). This seating loss is considerably less (9 kips) than the first 2 seating losses at this test rig, resulting a higher post-seating force. This final force is slightly out of tolerance high, by less than 1 kip. At 1310, the ok is given to leave this locked in force as-is, slightly out of the specified tolerance on the high side.

Test Rig #11 (3.5" dia., PWS Anchor Rod, Cut Threads, rod ID E-110, Heat OOF) Jacking step:

This is the 10th jacking step and the rod is being jacked to 0.85 Fu. The post-seating of the nut target is 991.270 +10/-0 kips. The expected hydraulic pressure at this locked off force is 5,800 psi. Based on previous jacking steps and other test rigs, the expected seating loss is ~60 kips (assuming can get tighten the nut better at this test rig with a plate wrench instead of with a chain wrench, because previous seating losses at this test rig were about 70 kips, which is too much – too great of a percentage of Fu), meaning the initial jacking target is ~1,055 kips. Jacking is started at 1314. At 5,800 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 998 kips. The hydraulic pressure is increased to 6,000 psi and the primary strain gauges give a force of 1,026 kips. The hydraulic pressure is increased to 6,100 psi and the primary strain gauges give a force of 1,045 kips. The AE is checked with the ok given at 1318. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,041 kips (bleed loss = 4 kips). After bleeding off the jacks, the primary strain gauges give a force of 970 kips (seating loss = 71 kips), which is not in tolerance. For the second jacking step, at 6,100 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,045 kips. The hydraulic pressure is increased to 6,150 psi and the primary strain gauges give a force of 1,056 kips. The hydraulic pressure is increased to 6,200 psi and the primary strain gauges give a force of 1,065 kips. The AE is checked with the ok given at 1322. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,062 kips (bleed loss = 3 kips). After bleeding off the jacks, the primary strain gauges give a force of 989.6 kips (seating loss = 70 kips), which is not in tolerance. For the third jacking step, at 6,200

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psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,066 kips. The AE is checked with the ok given at 1324. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,064 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 993 kips (seating loss = 71 kips). At 1325, the force is within the tolerance.

Test Rig #5 (2" dia., E2 Bearing Upper Rod, spare rod) Jacking step:

This is the 6th jacking step and the rod is being jacked to 0.65 Fu. The post-seating of the nut target is 243.750 +5/-0 kips. The expected hydraulic pressure at this locked off force is 1,700 psi. Based on the previous jacking step, the expected seating loss is ~14 kips, meaning the initial jacking target is ~260 kips. Jacking is started at 1328. At 1,800 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 241 kips. The hydraulic pressure is increased to 2,000 psi and the primary strain gauges give a force of 262 kips. The AE is checked with the ok given at 1330. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 259 kips (bleed loss = 3 kips). After bleeding off the jacks, the primary strain gauges give a force of 242.9 kips (seating loss = 16 kips), which is not in tolerance. For the second jacking step, at 2,000 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 265 kips. The AE is checked with the ok given at 1333. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 263 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 246 kips (seating loss = 17 kips). At 1334, the force is within the tolerance.

Test Rig #6 (3" dia., Tower Anchor Rod, Vulcan, rod ID b2W-6) Jacking step:

This is the 5th jacking step and the rod is being jacked to 0.60 Fu. The post-seating of the nut target is 501.480 +10/-0 kips. The expected hydraulic pressure at this locked off force is 3,600 psi. Based on the previous jacking step, the expected seating loss is ~35 kips, meaning the initial jacking target is ~540 kips. Jacking is started at 1335. At 3,600 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 493 kips. The hydraulic pressure is increased to 3,900 psi and the primary strain gauges give a force of 501 kips. The hydraulic pressure is increased to 4,100 psi and the primary strain gauges give a force of 526 kips. The hydraulic pressure is increased to 4,200 psi and the primary strain gauges give a force of 539 kips. The AE is checked with the ok given at 1328. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 537 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 501.2 kips (seating loss = 36 kips), which is not in tolerance. For the second jacking step, at 4,000 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 533 kips. The hydraulic pressure is increased to 4,200 psi and the primary strain gauges give a force of 539 kips. The AE is checked with the ok given at 1342. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 539 kips (bleed loss = 0 kips). After bleeding off the jacks, the primary strain gauges give a force of 504 kips (seating loss = 35 kips). At 1343, the force is within the tolerance.

VGO's reference electrode and pH checks, were not done this morning prior to the jacking steps because they were busy with the work on the jacks at TR 7. These reference electrode and pH checks happen instead in the afternoon after the jacking steps. This operation is between 1345 and 1420 at TR's 5 through 11. Elijah Turner with CT-METS for the Acoustic Emissions monitoring is notified so that he can time-mark the AE activity.

After the jacking steps earlier today (morning and afternoon), there is some more work by the ironworkers at TR 7. Because of a possible shift of the jacks and jacking beam during today's jacking step, the ironworkers try to tighten the locking collars against the shims installed earlier in the day between the locking collars of Jacks A and B and the end plate at the north end of the test rig. They attempt this between 1345 and 1350, but the locking collars will not turn any tighter against the shims. The east jack collar is tight on the east shim but loose on the west shim. The west jack collar is tight on the east shim but loose on the west shim. There is still a rotation but it is restricted and minimized by the locking collars each bearing against one of the two shims at each jack. The rotation at the jacks is less than it has been in previous jacking steps.

There is a hydraulic pump (Powerteam) in use during the TR 7 jack adjustment and the TR 5 through 11 jacking steps. A generator – Whisperwatt 7000 – ABF ID 002343 is on idle/standby at the work area most



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of the day and is only used briefly. Another generator – MQ Power – ABF ID 002051 is in use during the TR 7 jack adjustment and the TR 5 through 11 jacking steps. A compressor IR P185R ABF ID 002075 is idle during today's operations. A Kubota cart is used by the ironworkers today.

Note that there is k-rail at this work area. Some of the k-rail is rented and addressed by the rental agreement. Some of the k-rail is ABF's k-rail used on site and paid as rented from ABF on a daily basis. To elevate the k-rail, crane mats and timber blocking (12x12's) are in use. The k-rail quantities are as follows:

10' bought k-rail = 20 pieces

10' ABF k-rail = 8 pieces

20' rented k-rail = 22 pieces

20' ABF k-rail = 29 pieces

See Victor Altamirano diary for labor/equipment details, including the agreed extra work with ABF per a signed Extra Work Order with ABF for CCO 314 work.